

Preliminary

ORDER NO. ARD-7105064



NATIONAL Service Manual

SOLID STATE CASSETTE TAPE RECORDER WITH AM RADIO MODEL RQ-431S



RQ-431S MECHANISM SERIES

SPECIFICATIONS

Power Source: AC : 90~110, 110~125, 200~220,
220~250 volts 50/60 Hz
DC : 9 volts (six "C" size batteries)
9 volts negative-polarity car battery
(with car adaptor, optional)

Power Consumption: Approx. 6 W

Motor: DC mechanical governor motor

Maximum Output: 1.5 W

Transistors: 2SA102(1) 2SA101(2) 2SB173C(1)
2SB175(2) 2SB178(2) 2SA550(1)

Tracks: 2 track, monaural

Tape Speed: 1-7/8 ips

Fast Forward Time: Less than 240 seconds
(with C-60 cassette tape)

Rewind Time: Less than 120 seconds
(with C-60 cassette tape)

Frequency Response: 70~8,000 Hz

Recording System: AC bias 31 kHz

Battery Life: Approx. 5.5 hours

Input: "MIC" 10 K Ω

Output: "MONITOR" 8 Ω

Speaker: 3-1/2" dynamic speaker

—RADIO SECTION—

Frequency Range: 525~1,605 kHz

Intermediate Frequency: 455 kHz

Sensitivity: 60 μ V/m/50 mW

Dimensions: 8-3/4" (W) \times 2-7/8" (H) \times 9-3/8" (D)

Weight: 4-7/8 lbs.

<EXPORT DIVISION>

MATSUSHITA ELECTRIC TRADING CO., LTD.
P.O. Box 288 Central, Osaka, Japan

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
AUDIO TAPE RECORDING DEPT.

LOCATION OF PARTS

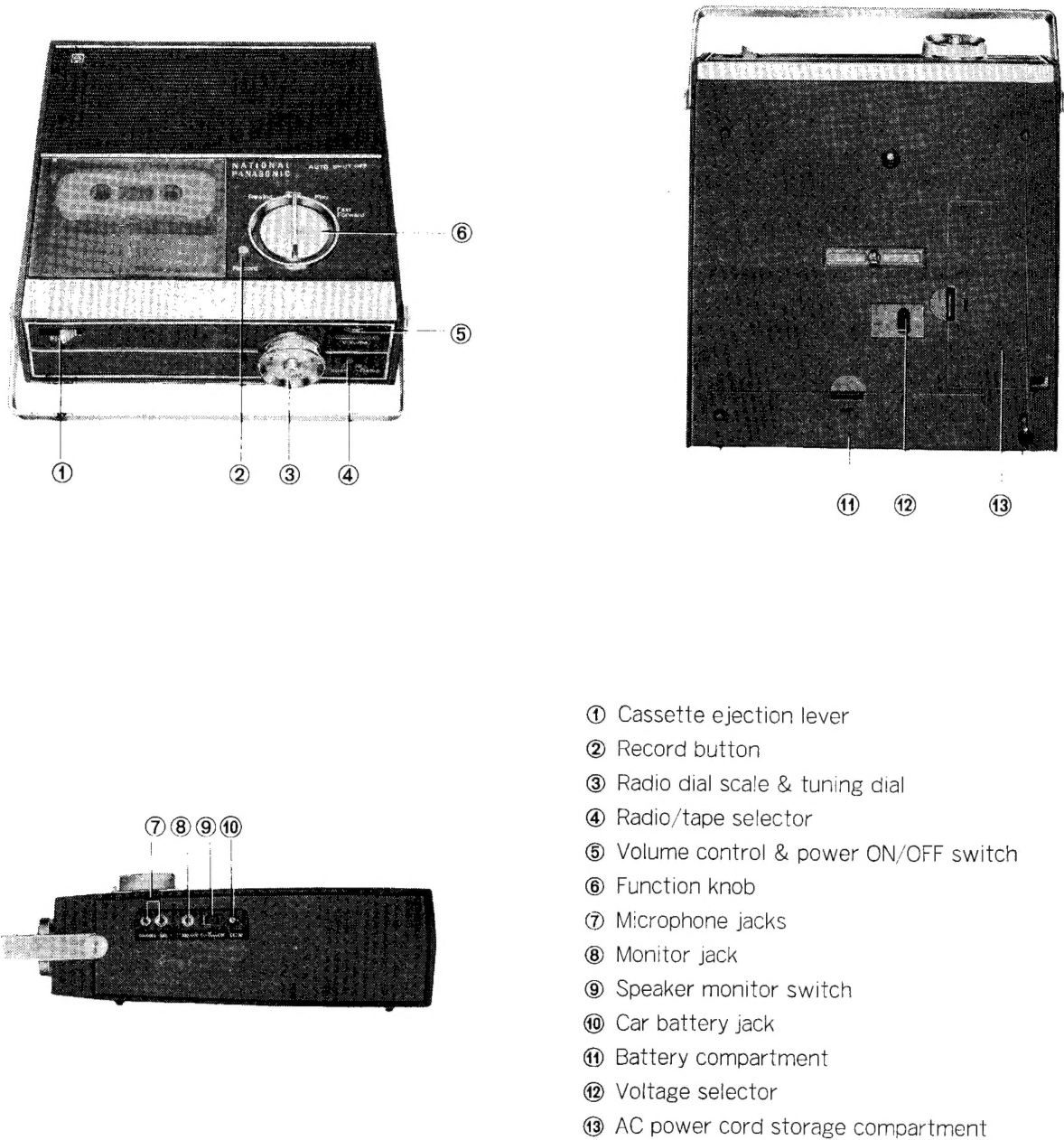
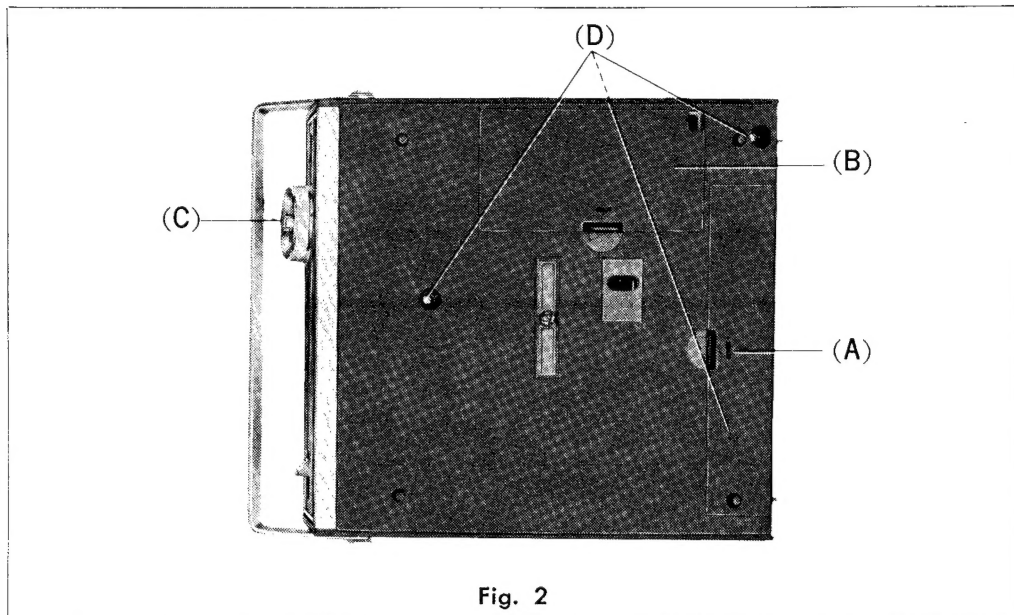


Fig. 1

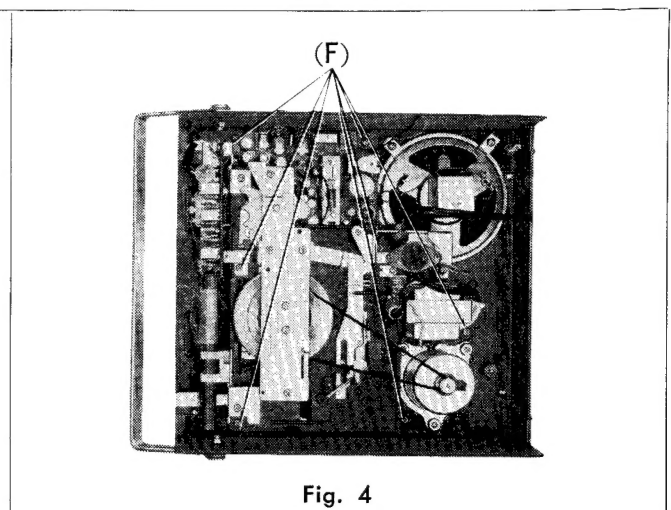
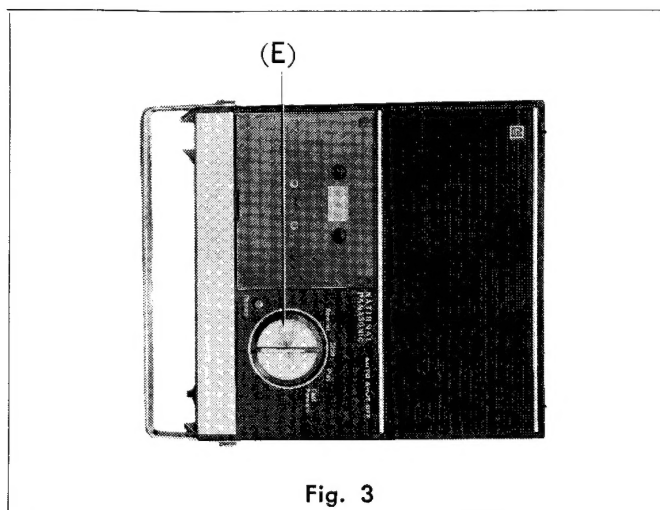
DISASSEMBLY INSTRUCTIONS

HOW TO REMOVE BOTTOM CASE



1. Remove the battery cover (A).
2. Remove the AC cord cover (B) and draw out the AC cord.
3. Remove the tuning dial (C).
4. Remove 3 bottom case holding screws (D).
5. Then the bottom case can be removed.

HOW TO REMOVE CHASSIS



1. Remove the function knob (E).
2. Remove 7 chassis holding screws (F).
3. Then the chassis can be removed.

REPLACEMENT PARTS LIST

Before you give us an order for parts, please read the following instructions without fail.

1. Parts written in gothic in this Replacement Parts List are always kept in stock in our department, and can therefore be shipped earlier than other parts.
2. Parts written in slender letters are not kept in stock, and will therefore be shipped later. So place an order for them separately.
3. Disassembled parts of Sub Assembly are respectively given a suffix to the Ref. No.
4. Parts other than the above are not available from us.

LISTA DE PIEZAS DE REPUESTO

Antes de hacernos un pedido de piezas, dígnese leer sin falta las instrucciones siguientes:

1. De las piezas cuyos nombres aparecen escritos con letras góticas en esta Lista de Piezas de Repuesto, tenemos surtido en nuestro departamento, y por lo tanto, podemos enviarlas antes que otras.
2. De las escritas con letras más finas, no tenemos surtido, por lo que su envío se retardará. Por eso, haga el favor de hacer por separado los pedidos.
3. Las piezas demontadas del Sub Assembly llevan respectivamente un sufijo a la Referencia No.
4. No podemos proveer de piezas no mencionadas arriba.

LISTE DES PIÈCES DE RECHANGE

Avant de nous commander des pièces, veuillez lire sans faute les instructions suivantes:

1. Les pièces écrites en majuscule dans cette Liste de rechange sont toujours en magasin dans notre section, et pourront donc s'expédier plus vite que les autres pièces.
2. Les pièces écrites en minuscules ne sont pas en magasin, et s'expédieront plus tard. Passez-nous donc séparément votre commande.
3. Les pièces désassemblées du Sub Assembly ont chacune un suffixe au Ref. No.
4. D'autres pièces que celles montrées ci-dessus ne sont pas disponibles.

ERSATZTEILELISTE

Bitte lesen Sie die folgende Anweisung sorgfältig, bevor Sie die Bestellung auf unsere Ersatzteile geben.

1. Die Ersatzteile, die in dieser Liste mit der fetten Schrift geschrieben sind, sind immer in unserer Abteilung als Vorrat befindlich, und sind daher schneller zu liefern als andere Teile.
2. Die Ersatzteile in der dünnen Schrift sind nicht vorrätig und brauchen deshalb einiger Zeit bis zur Lieferung. Bitte geben Sie daher die Bestellung separat für solche Teile.
3. Demontierte Teile der Unterbaugruppe sind je mit einer Zusatzzahl nach der Referenznummer versehen.
4. Andere Ersatzteile als die obigen Können wir nicht liefern.

更換用零件一覽

特此說明有關更換用零件如下，以供參考。敬請在訂購之前惠豫一讀，以免發生差錯為荷。

1. 凡是在更換用零件一覽中用粗字體所註者，均常備有現貨在木事業部，故此項得以較之其他零件提早裝船供應之。
2. 用細字體記明者則不然，因為沒有現貨，自然不得及時供應。訂購時，請將上述兩者分開行之為宜。
3. 凡是局部裝備組件所拆散的零件，各附有接尾數目字在該組件查詢號碼之後頭。
4. 凡是上述以外的零件，一概無從供應之。

RESISTORS

Ref. No.	Description	Part No.
R1, 8 ...	Carbon Resistor 18 K Ω 1/4 W	ERD14VJ183
R2, 9 ...	Carbon Resistor 4.7 K Ω 1/4 W	ERD14VJ472
R3 ...	Carbon Resistor 1.8 K Ω 1/4 W	ERD14VJ182
R4 ...	Carbon Resistor 220 Ω 1/4 W	ERD14VJ221
R5 ...	Carbon Resistor 120 K Ω 1/4 W	ERD14VJ124
R6, 10 ...	Carbon Resistor 820 Ω 1/4 W	ERD14VJ821
R7 ...	Carbon Resistor 220 K Ω 1/4 W	ERD14VJ224
R11 ...	Carbon Resistor 470 Ω 1/4 W	ERD14VJ471
R12 ...	Carbon Resistor 8.2 K Ω 1/4 Ω	ERD14VJ822
R13, 15, 41 ...	Carbon Resistor 15 K Ω 1/4 W	ERD14VJ153
R14 ...	Carbon Resistor 270 Ω 1/4 W	ERD14VJ271
R16 ...	Carbon Resistor 390 Ω 1/4 W	ERD14VJ391
R17, 28 ...	Carbon Resistor 560 Ω 1/4 W	ERD14VJ561
R18, 42 ...	Carbon Resistor 22 K Ω 1/4 W	ERD14VJ223
R19 ...	Carbon Resistor 56 K Ω 1/4 W	ERD14VJ563
R20 ...	Carbon Resistor 10 K Ω 1/4 W	ERD14VJ103
R21, 27 ...	Carbon Resistor 1.2 K Ω 1/4 W	ERD14VJ122
R22, 37 ...	Carbon Resistor 47 Ω 1/4 W	ERD14VJ470
R23 ...	Carbon Resistor 6.8 K Ω 1/4 W	ERD14VJ682
R24, 40 ...	Carbon Resistor 100 K Ω 1/4 W	ERD14VJ104
R25 ...	Carbon Resistor 2.7 K Ω 1/4 W	ERD14VJ272
R26, 45 ...	Carbon Resistor 2.2 K Ω 1/4 W	ERD14VJ222
R29 ...	Carbon Resistor 33 K Ω 1/4 W	ERD14VJ333
R30 ...	Carbon Resistor 10 K Ω 1/4 W	ERD14TJ103
R31 ...	Carbon Resistor 330 Ω 1/4 W	ERD14VJ331
R32 ...	Carbon Resistor 4.7 Ω 1/4 W	ERD14VJ477
R33 ...	Carbon Resistor 270 Ω 1/4 W	ERD14VJ271
R34 ...	Carbon Resistor 1.5 K Ω 1/4 W	ERD14VJ152
R35 ...	Carbon Resistor 68 Ω 1/4 W	ERD14VJ680
R36 ...	Wire-wound Resistor 2.2 Ω 1/2 W	ERM12PK2R2
R38 ...	Carbon Resistor 270 Ω 1/4 W	ERD14TJ271
R39 ...	Carbon Resistor 10 Ω 1/4 W	ERD12TJ100
R43 ...	Carbon Resistor 4.7 Ω 1/4 W	ERD14VJ477
R44 ...	Carbon Resistor 3.3 K Ω 1/4 W	ERD14VJ332
R47 ...	Carbon Resistor 56 Ω 1/4 W	ERD14VJ560
R48 ...	Carbon Resistor 470 Ω 1/4 W	ERD14VJ471

VARIABLE RESISTORS

Ref. No.	Description	Part No.
VR1	Variable Resistor (Volume)	EVJD0BT12A14
VR2	Semi-fixed Variable Resistor	EVJS3A00B24

CAPACITORS

C1	Ceramic Capacitor	0.0047 μ F	ECKE05472MY
C2	Titanic Capacitor	2 pF	ECCD05020C
C3, 9, 10	Ceramic Capacitor	0.01 μ F	ECKE05103MY
C4	Electrolytic Capacitor	10 μ F	ECEA6.3V10N
C5	Titanic Capacitor	8 pF	ECCD05080C
C6, 7, 8	Ceramic Capacitor	0.022 μ F	ECKE05223P
C11	Mylar Capacitor	0.01 μ F	ECQM05103KZ
C12	Electrolytic Capacitor	47 μ F	ECEA10V47N
C13, 17, 21, 31	Mylar Capacitor	0.001 μ F	ECQM05102MZ
C14, 25, 26 ...	Electrolytic Capacitor	47 μ F	ECEA10V47N
C15	Mylar Capacitor	0.01 μ F	ECQM05103MZ
C16, 24	Electrolytic Capacitor	1 μ F	ECEA50V1N
C18	Electrolytic Capacitor	47 μ F	ECEA6.3V47N
C19, 22	Electrolytic Capacitor	33 μ F	ECEA6.3V33N
C20, 33	Mylar Capacitor	0.018 μ F	ECQM05183MZ
C23	Electrolytic Capacitor	10 μ F	ECEA10V10N
C27	Electrolytic Capacitor	470 μ F	ECEA10V470N
C28, 29	Mylar Capacitor	0.0039 μ F	ECQM05392MZ
C30	Electrolytic Capacitor	470 μ F	ECEB16V470N
C32	Aluminum Capacitor	0.1 μ F	ECAG25ER1
C34	Electrolytic Capacitor	33 μ F	ECEA10V33N
C35	Electrolytic Capacitor	1000 μ F	ECEA16V1000N
C36	Electrolytic Capacitor	220 μ F	ECEA10V220N
C38, 39, 40, 41	Variable Capacitor		PVCLY20TN

TRANSISTORS

Tr1	Transistor	2SA106(AA)
Tr2	Transistor	2SA101(BX)
Tr3	Transistor	2SA101(AY)
Tr4	Transistor	2SB173C

Ref. No.	Description	Part No.
Tr5, 6	Transistor	2SB175B
Tr7, 8	Transistor	2SB178(MNOP)
Tr9	Transistor	2SA550(QR)

DIODES & RECTIFIER

D1, 2	Diode	OA90Z
D3	Varistor	EYV3201R2J2
D4	Silicon Rectifier	1S1850R

THERMISTOR

TH	Thermistor	QVM500A
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TRANSFORMERS

T1	1st IFT	RLI2B151
T2	2nd IFT	RLI2B250
T3	3rd IFT	RLI2B451
T4	Input Transformer	QLAT0101
T5	Output Transformer	QLAT0301
T6	Power Transformer	QLP0567

COILS

L1	Ferrite Core Antenna	ELR10B0029
L2	Local Oscillator Coil	RL02B43
L3, 6	Noise Prevent Coil-A	QLP0114
L4	Bias Oscillation Coil	QLB0145
L5	Choke Coil	QLP0105

SWITCHES

S1	Slide Switch (Record/Playback)	QSST0001S
S2	Leaf Switch (Amp, Motor Power)	QSBT0001
S3	Power ON/OFF (Coupled with VR1)	
S4	Slide Switch (RADIO/TAPE)	QSS1112

Ref. No.	Description	Part No.
S5	Slide Switch (Monitor ON/OFF)	QSST0016
S6	AC/DC Selector (Coupled with Relay)	
S7	Voltage Selector Switch	QSR0004

ELECTRICAL PARTS

E1	Record/Playback Head	WY034Z
E2	Relay (with S6)	QSK0114
E3	Radio Printed Circuit Board Assembly	QEJ0318
E4	Audio Printed Circuit Board Assembly	QEM1191
E5	M3 Jack (MIC, EXT. SP)	QJAT0102A
E6	M2 Jack (REMOTE)	QJAT0103A
E7	DC IN Jack	QJAT0105
E8	Jack Board	QTT2025
E9	Volume Knob	QGT1145
E10	Heat Sink	QTH1073
E11	Cord Bushing	QTD1129
E12	Record Switch Lever	QTTT0005
E13	Record Switch Lever Screw	QHQT038S
E14	Record Switch Lever Guide	QTTT0006
E15	Record Switch Lever Spring	QBT1070
E16	Record Switch Slider	QBPT0001
E17	Speaker	EAS9P59SD
E18	AC Power Cord	QFC1041

MECHANICAL PARTS

M1	Stop Ring E3 ϕ	XUC3FT
M2	Fiber Washer 4.2 \times 6 \times 0.5	QBK7046
M3	Pressure Roller Lever Assembly	QXL0471
M3-1	Pressure Roller	QXP0334
M4	Pressure Roller Spring	QBN1198
M5	Screw $\oplus 2 \times 4$	XSN2+4
M6	Screw $\ominus 2 \times 7$	XSN2-7
M7	Screw $\oplus 2 \times 6$	XSN2+6
M8	Spring Washer SW2 ϕ	XWA2B
M9	Lug Terminal-A	QMQ1131

Ref. No.	Description	Part No.
M10	Head Adjust Spring	QBCT0002
M11	Detection Piece	QBJ1585
M12	Auto Stop Detection Lever	QML2074
M13	Screw $\oplus M2.6 \times 5$	XSC26+5
M14	Detection Lever Spacer	QMS1904
M15	Tape Guide	QML2110
M16	Stop Ring E4 ϕ	XUC4FT
M17	Auto Stop Detection Lever Spring	QSB1045
M18	Tapping Screw $\oplus 3 \times 6$	XTN3+6BF
M19	Record Lock Angle	QML2108
M20	Record Lock	QML2070
M21	Record Lock Button Spring	QBCT0004
M22	Lever Pressure Washer	QWQ1128
M23	Record Lock Lever Assembly	QML2069
M24	Record lock Lever Spring	QBTT0007
M25	Steel Ball	QDK1011
M26	Cassette Ejection Lever	QML2109
M27	Stop Ring E1.5 ϕ	XUC15FT
M28	Poly Slider 2.1 \times 4 \times 0.15	QWQ1137
M29	Supply Reel Table Assembly	QXP0345
M30	Takeup Reel Table Assembly	QXP0344
M31	Tetoron Washer 2.2 \times 6 \times 0.15	QWQT0005
M32	Back Tension Spring	QBP1334
M33	CS Ring 6 ϕ	QMQ1130
M34	Record Prevent Lever	QML2068
M35	Belt Pressure Lever Assembly	QXL0463
M35-1	Belt Pressure Pulley	QDPT0008
M36	Guide Arm-A Assembly	QXA0109
M36-1	Snap Washer 2.6 \times 6 \times 0.5	QWQT0002
M36-2	Guide Pulley	QDQT0005
M36-3	Clutch Lever Spring	QBT1064
M37	Guide Arm-B Assembly	QXA0110
M37-1	Rewind Pulley	QXP0333
M38	Takeup Belt	QDBT0002
M39	Tapping Screw $\oplus 2.6 \times 4$	XTN26+4BF
M40	Cassette Pressure Spring	QBPT0011
M41	Cassette Ejection Assembly	QXH0098

Ref. No.	Description	Part No.
M41-1	Cassette Ejection Spring	QBTT0004
M42	Screw $\oplus 3 \times 6$	QHQT1102
M43	Flywheel Thrust	QMQT0005
M44	Steel Ball	QDK1002
M45	Flywheel Supporter	QMMT0002
M46	Tapping Screw $\oplus 3 \times 8$	XTN+8BF
M47	Flywheel Assembly	QXF0066
M48	Operator Assembly	QXL0462
M49	Guide Lever Assembly	QXL0460
M50	Guide Lever Spring	QBP1329
M51	Takeup Lever	QML2064
M52	Head Control Lever Assembly	QML2063
M52-1	Head Control Lever Spring	QBS1044
M52-2	Catch Lever Spring	QBT1134
M53	Catch Lever Assembly	QXL0464
M53-1	Stop Ring E2.3 ϕ	XUC23FT
M53-2	Tetoron Washer 3.2 \times 6 \times 0.15	QWQT0004
M53-3	Auto Stop Roller	QDP1377
M53-4	Auto Stop Drive Spring	QBN1183
M53-5	Catch Lever Spring	QBS1046
M53-6	Auto Stop Drive Piece Assembly	QXL0472
M54	Motor Belt	QDB0058
M55	Motor	QDM0976
M55-1	Motor Pulley	QDP1110
M55-2	Motor Holding Screw	QHQT1162
M55-3	Screw M2.6 \times 4	XXA26D4

CABINET PARTS

G1	Main Case Assembly	QYB0254
G1-1	Cassette Lid Assembly	QKD1131
G1-2	Rubber Cushion	QBG1210
G1-3	Cassette Lid up Spring	QBP1330
G1-4	Speaker Holding Metal	QKT1523
G1-5	Handle	QKH1059
G1-6	Handle Metal	QKH1060
G1-7	Handle Spacer	QKH1061
G1-8	Screw $\oplus 3 \times 8$ Tapping	XTN3+8B

Ref. No.	Description	Part No.
G1-9	Nut 4 ϕ	XNG4ES
G1-10	Spring Washer 4 ϕ	XWA4B
G1-11	Flat Washer 4.2 \times 12 \times 0.8	QWQ1147
G2	Bottom Case Assembly	QYC0125
G2-1	Battery Terminal \oplus	QBJ0047
G2-2	Battery Spring	QBJ0004
G3	Battery Cover Assembly	QYF0089
G4	AC Cord Cover	QKD1132A
G5	Operate Knob Assembly	QYT0224
G5-1	Operate Knob Spring	QBP1332
G6	Tuning Knob Assembly	QYQ0173
G7	Record Button	QG01077
G8	Cassette Eject Button	QGO4082
G9	Screw (Tuning Knob)	QGK1873
G10	Tetoron Washer 3.2 \times 6 \times 0.15	QWQT0004
G11	Screw $\oplus 3 \times 8$ (Red)	XSN3+8RS
G12	Screw $\oplus 3 \times 6$	XSN3+6FCS
G13	Screw $\oplus 3 \times 8$	XST3+8FCS
G14	Screw $\oplus 3 \times 28$	XSN3+28FCS
G15	Tapping Screw $\oplus 3 + 6$ (Red)	XTN3+6BR

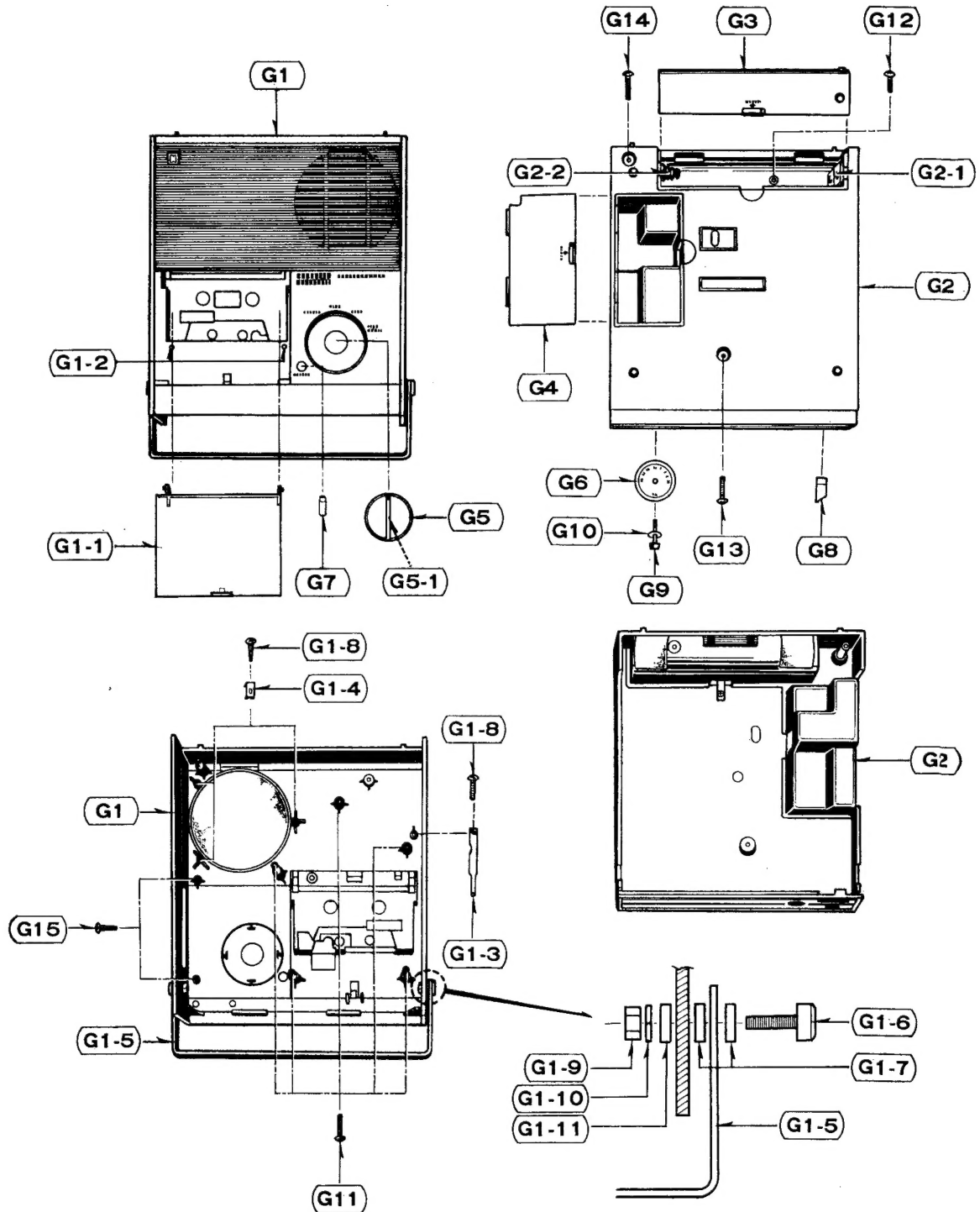
ACCESSORIES

A1	Microphone	WM2241N
A2	Cassette Tape	QFTITCCNRA9Z
A3	Microphone Case	QFK0034
A4	Microphone Stand	WN133N
A5	Earphone	EAE2SB1
A6	Plug Adaptor	QJP0603S
A7	Instruction Book	QQT1486

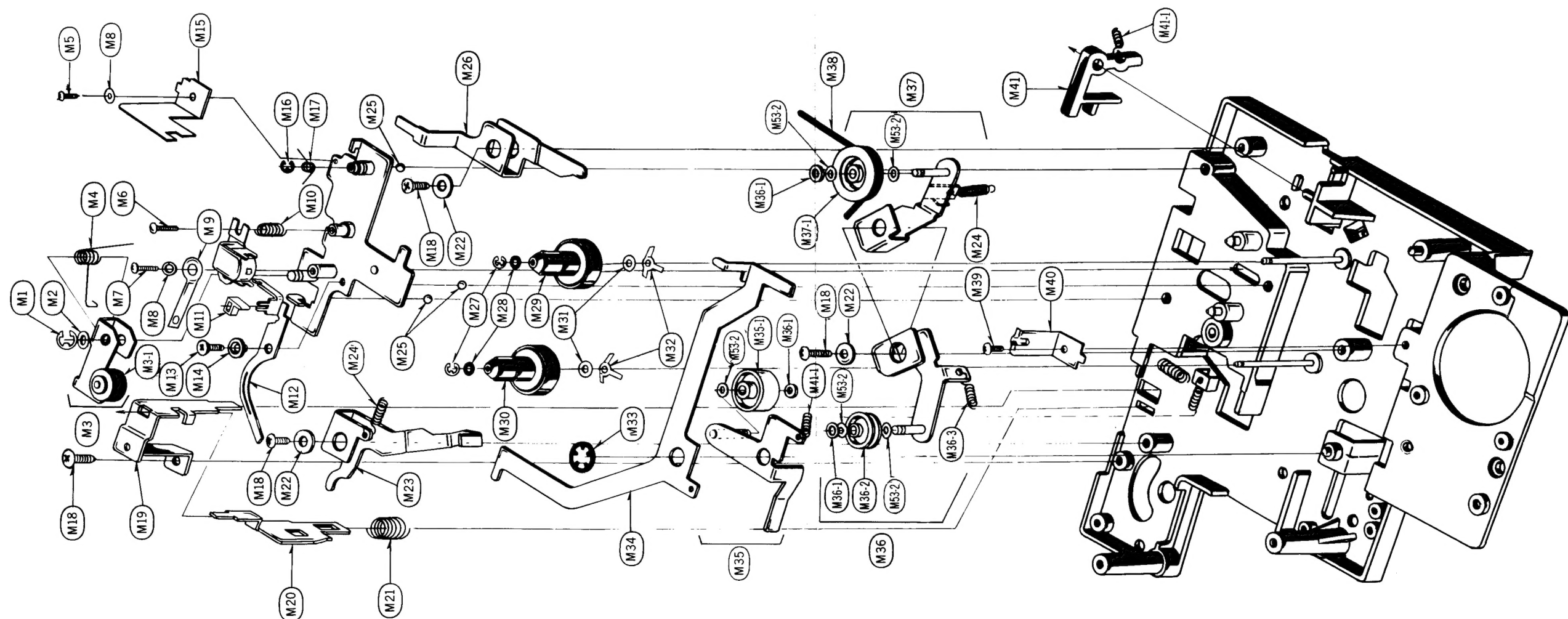
PACKINGS

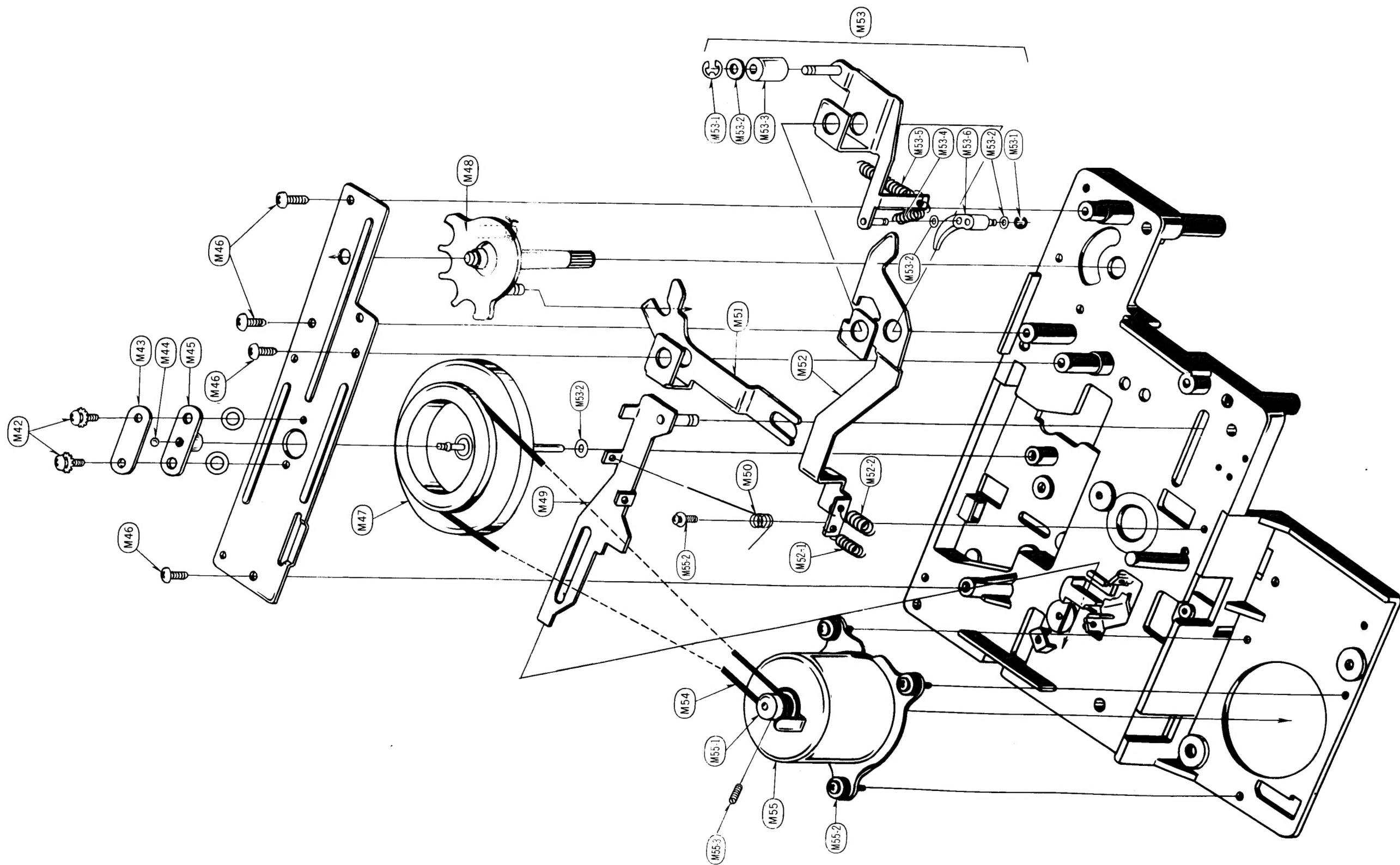
P1	Inner Packing	QPN2455
P2	Inner Cushion-A	QPN2399
P3	Inner Cushion-B	QPN2400
P4	Poly Sheet	QPQ1063
P5	Poly Bag	QMD0064

CABINET PARTS

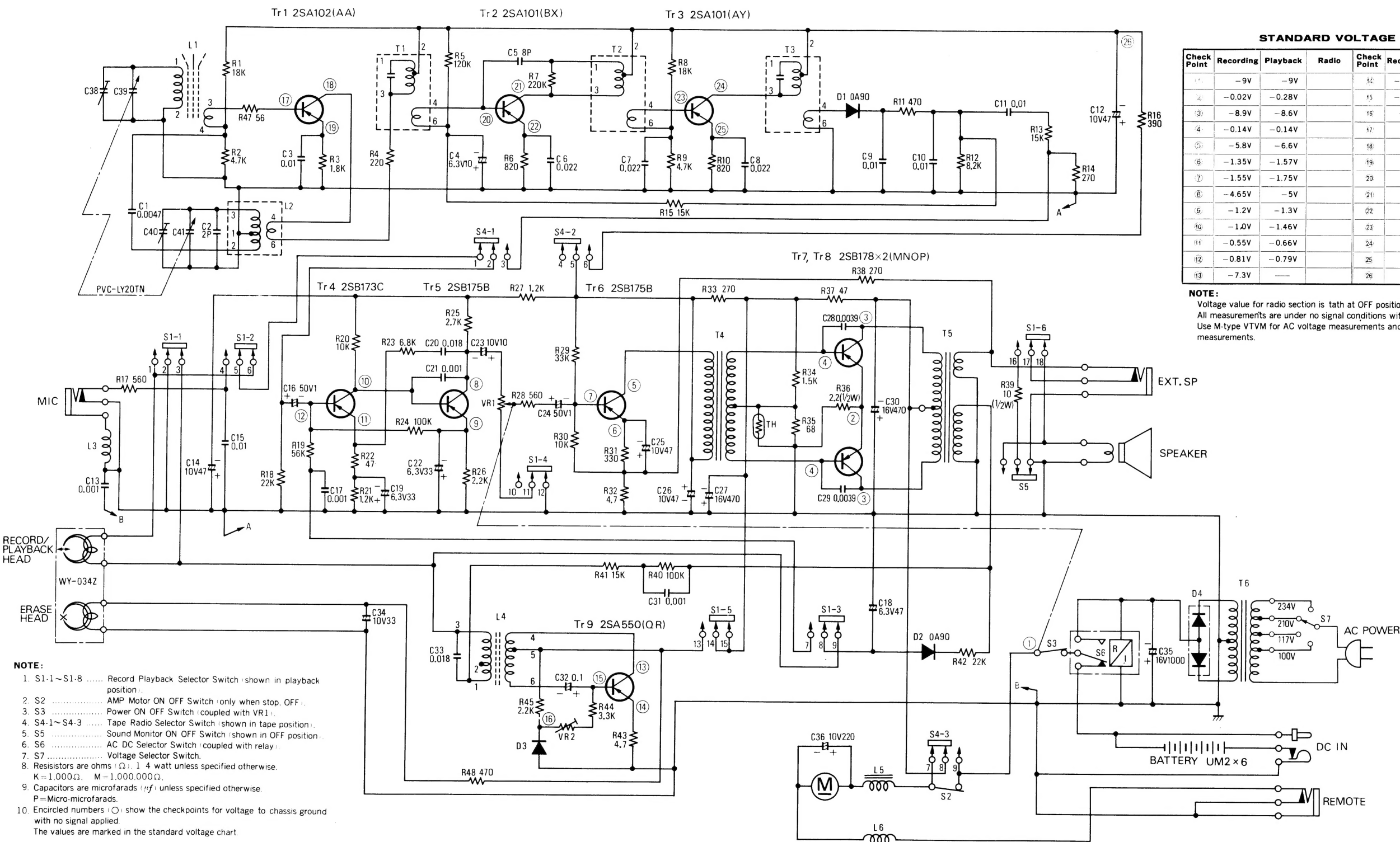


EXPLODED VIEWS





SCHEMATIC DIAGRAM MODEL RQ-431S



STANDARD VOLTAGE CHART

Check Point	Recording	Playback	Radio	Check Point	Recording	Playback	Radio
1	-9V	-9V		12	-0.06V	—	
2	-0.02V	-0.28V		15	-0.58V	—	
3	-8.9V	-8.6V		16	-1.3V	—	
4	-0.14V	-0.14V		17			-0.91V
5	-5.8V	-6.6V		18			-5.38V
6	-1.35V	-1.57V		19			-0.8V
7	-1.55V	-1.75V		20			-0.54V
8	-4.65V	-5V		21			-5.4V
9	-1.2V	-1.3V		22			-0.34V
10	-1.0V	-1.46V		23			-1.0V
11	-0.55V	-0.66V		24			-5.45V
12	-0.81V	-0.79V		25			-0.77V
13	-7.3V	—		26			-5.5V

NOTE:
Voltage value for radio section is tath at OFF position of motor.
All measurements are under no signal conditions with volume at minimum position.
Use M-type VTVM for AC voltage measurements and P-type VTVM for DC voltage measurements.